AMENDMENTS TO THE CLAIMS

1. (Currently Amended) A method of noise reduction for reducing noise in a noisy input signal, the method comprising:

grouping noisy channel feature vectors and clean channel feature vectors into a plurality of mixture components;

fitting a function applied to ~~a sequence of~~ noisy channel feature vectors associated with a mixture component ~~that represent a noisy channel signal~~ to ~~a~~ only those ~~sequence of~~ clean channel feature vectors that are associated with the same mixture component ~~represent a clean channel signal~~ to determine at least one correction vector and at least one scaling vector;

multiplying the scaling vector by ~~a~~each noisy input feature vector ~~of a sequence of noisy input feature vectors that represent a noisy input signal~~ to produce a ~~sequence of~~ scaled feature vectors; and

adding a correction vector to ~~the~~each scaled feature vector to form a ~~sequence of~~ clean input feature vector~~s, the sequence of clean input feature vectors representing a clean input signal having less noise than the noisy input signal~~.

2. (Currently Amended) The method of claim 1 wherein determining at least one correction vector and at least one scaling vector comprises generating a set of correction and scaling vectors, each correction vector and scaling vector corresponding to a separate mixture component of ~~the sequence of~~ noisy channel feature vectors.

3. (Original) The method of claim 2 wherein determining a correction vector comprises:

grouping the noisy channel feature vectors into at least one mixture component;

determining a distribution value that is indicative of the distribution of the noisy channel feature vectors in at least one mixture component; and

using the distribution value for a mixture component to determine the correction vector and the scaling vector for that mixture component.

4. (Original) The method of claim 3 wherein using the distribution value to determine a correction vector and a scaling vector for a mixture component comprises:

determining, for each noisy channel feature vector, at least one conditional mixture probability, the conditional mixture probability representing the probability of the mixture component given the noisy channel feature vector, the conditional mixture probability based in part on a distribution value for the mixture component; and

applying the conditional mixture probability in a linear least squares calculation.

5. (Original) The method of claim 4 wherein determining a conditional mixture probability comprises:

determining a conditional feature vector probability that represents the probability of a noisy channel feature vector given the mixture component, the probability based on the distribution value for the mixture;

multiplying the conditional feature vector probability by the unconditional probability of the mixture component to produce a probability product; and

dividing the probability product by the sum of the probability products generated for all mixture components for the noisy channel feature vector.

6. (Original) The method of claim 5 wherein determining a conditional feature vector probability comprises determining the probability from a normal distribution formed from the distribution value for a mixture component.

7. (Original) The method of claim 6 wherein determining a distribution value comprises determining a mean vector and determining a standard deviation vector.

8. (Currently Amended) The method of claim 2 wherein multiplying the scaling vector by a~~each~~ noisy input feature vector comprises:

identifying a mixture component for the~~each~~ noisy input feature vector; and

multiplying the~~each~~ noisy input feature vector by a scaling vector associated with the mixture component.

9. (Currently Amended) The method of claim 8 wherein adding a correction vector comprises adding a correction vector associated with the mixture component to the~~each~~ scaled feature vector.

10. (Currently Amended) The method of claim 9 wherein identifying a mixture component comprises identifying the most likely mixture component for the~~each~~ noisy input feature vector.

11. (Original) The method of claim 10 wherein identifying the most likely mixture component comprises:

grouping the noisy channel feature vectors into at least one mixture component;

determining a distribution value that is indicative of the distribution of the noisy channel feature vectors in at least one mixture component;

for each mixture component, determining a probability of the noisy input feature vector given the mixture component based on a normal distribution formed from the distribution value for that mixture component; and

selecting the mixture component that provides the highest probability as the most likely mixture component.

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12. (Currently Amended) A method of reducing noise in a noisy signal, the method comprising:

identifying a <u>single</u> mixture component for a noisy feature vector representing a part of the noisy signal;

retrieving a correction vector and a scaling vector associated with the identified mixture component;

multiplying the noisy feature vector by the scaling vector to form a scaled feature vector; and

adding the correction vector to the scaled feature vector to form a clean feature vector representing a part of a clean signal.

13. (Original) The method of claim 12 wherein identifying a mixture component comprises identifying a most likely mixture component for a noisy feature vector.

14. (Original) The method of claim 13 wherein identifying a most likely mixture component comprises:

for each mixture component, determining a probability of the noisy feature vector given the mixture component; and

selecting the mixture component that provides the highest probability as the most likely mixture component.

15. (Original) The method of claim 14 wherein determining a probability comprises determining a probability based on a distribution of noisy channel feature vectors that are assigned to the mixture component.

16. (Original) The method of claim 15 wherein determining a probability based on a distribution comprises determining a probability based on a mean and a standard deviation of the distribution.

17. (Original) The method of claim 12 wherein retrieving a correction vector and a scaling vector comprises retrieving a correction vector and a scaling vector formed through fitting a function evaluated on a sequence of noisy channel feature vectors to a sequence of clean channel feature vectors.

18. (Original) The method of claim 17 wherein fitting the function comprises performing a linear least squares calculation.

19. (Original) The method of claim 18 wherein performing a linear least squares calculation comprises utilizing a weight value in the linear least squares calculation, the weight value providing an indication of association between a noisy channel feature vector and a mixture component.

20. (Original) The method of claim 19 wherein utilizing a weight value comprises:

determining a conditional probability of a mixture component given a noisy channel feature vector; and

using the conditional probability as the weight value.

21. (Original) The method of claim 20 wherein determining a conditional probability comprises:

for each mixture component, determining a probability of the mixture component and determining a feature probability that represents the probability of the noisy channel feature vector given the mixture component;

for each mixture component, multiplying the probability of the mixture component by the respective feature probability for the mixture component to provide a respective probability product;

summing the probability products of the noisy feature vector for all mixture components to produce a probability sum;

multiplying the probability of the mixture component associated with the correction vector and the scaling vector by the probability of the noisy feature vector given the mixture component associated with the correction vector and the scaling vector to produce a second probability product; and

dividing the second probability product by the probability sum.

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22. (Currently Amended) A computer-readable medium comprising computer-executable instructions for reducing noise in a signal through steps comprising:

using a representation value that represents a portion of the signal to identify~~ing~~ an optimal mixture component for that portion;

selecting a correction value and a scaling value associated with the identified optimal mixture component; and

multiplying the scaling value by the representation value to form a product; and

adding the product to the correction value to form a noise-reduced value that represents a portion of a noise-reduced signal.

23. (Original) The computer-readable medium of claim 22 wherein the step of using a representation value to identify an optimal mixture component comprises:

for each mixture component, applying the representation value to a distribution of representation values associated with the mixture component to generate a likelihood of the representation value given the mixture component; and

selecting the mixture component that generates the greatest likelihood as the optimal mixture component.

24. (Currently Amended) A method of generating correction values for removing noise from an input signal, the method comprising:

accessing a set of noisy channel vectors representing a noisy channel signal;

accessing a set of clean channel vectors representing a clean channel signal;

grouping the noisy channel vectors and the clean channel vectors into a plurality of mixture components; and

determining a correction value for ~~a~~each mixture component without reference to clean channel vectors that are not associated with the mixture component~~based on the set of noisy channel vectors and the set of clean channel vectors~~.

25. (Currently Amended) The method of claim 24 wherein determining a correction value comprises fitting a function based on ~~the~~ noisy channel vectors to ~~the~~ clean channel vectors.

26. (Original) The method of claim 25 wherein fitting a function comprises performing a linear least squares calculation.

27. (Original) The method of claim 26 wherein performing a linear least squares calculation comprises:

determining a distribution parameter for each mixture component, the distribution parameter describing the distribution of noisy channel vectors associated with the respective mixture component;

using the distribution parameter to form a weight value; and

utilizing the weight value in the linear least squares calculation.

28. (Original) The method of claim 27 wherein using the distribution parameter to form a weight value comprises using the distribution parameter to determine a probability of a mixture component given a noisy channel vector.

29. (Original) The method of claim 24 wherein determining a correction value comprises determining an additive correction value and a scaling correction value.

30. (Original) The method of claim 24 wherein grouping the noisy channel vectors comprises determining a distribution parameter for each mixture component, the distribution parameter describing the distribution of noisy channel vectors associated with the respective mixture component and wherein determining a correction value comprises determining a correction value based in part on the distribution parameters.

31. (Original) The method of claim 24 further comprising using the correction values to remove noise from an input signal through a process comprising:

converting the input signal into input vectors;

finding a best suited mixture component for each input vector; and

for each input vector, applying to the input vector a correction value associated with the mixture component best suited for the input vector.